

A Distributional List of Southern California Opisthobranchs

by

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The opisthobranch fauna inhabiting the intertidal regions along the coast of California has become comparatively well known. The early species descriptions of Cooper (1862, 1863), Bergh (1879, 1894), and Cockerell (1901-1915), while of a rather cursory nature, form the basis upon which more precise investigations by later workers have been carried out. Outstanding among these reports are the excellent anatomical accounts by MacFarland (1905-1929) of Central California forms. The publication of a distributional list of all the known species from the Pacific Coast of North America up to 1926 (O'Donoghue) has also contributed greatly to our knowledge of these mollusks. Of more recent date is a list by Smith and Gordon (1948) of species from the Monterey area, and a key by Steinberg (1954) to the Central California forms. Marcus (1961) has described 12 new species from this coast and provided anatomical details for 38 others.

In view of additional data obtained by various observers and from my own collections along the coasts of California and Baja California, Mexico, during the past several years, it seems appropriate to offer a synopsis of the bathymetric and geographic ranges of Southern California opisthobranchs as they are now known. Miss Joan Steinberg has kindly provided me with information regarding the northern ranges of many species, and for bathymetric observations I am indebted to the late Conrad Limbaugh, to Mrs. Limbaugh, and to Mrs. Homer Rydell.

The marine province of Southern California is here geographically defined as that region between Point Conception and the Mexican border. Excluding the cephalaspideans and pteropods, all the regional species for which there exist descriptions sufficient to permit identification are included. In view of the chaotic taxonomic state of the genus Triopha, it

was deemed advisable to include the names of all the species reported from Southern California although probably only two distinct forms occur.

The systematic arrangement here followed is that of Odhner (1939). For convenience, the habitats are divided into (1) bays, lagoons, and estuaries with their associated boat landings, pilings, wharfs, buoys, etc.; (2) intertidal; (3) subtidal; and (4) the kelp canopy which, within the limits of these observations, consists exclusively of the giant brown kelp, Macrocystis pyrifera, and grows in 20-100 feet of water. The quantitative observations are based on some 140 field trips over the past 10 years, principally to Mission and San Diego Bays, Point Loma, the Coronados Islands, and the kelp beds off La Jolla and San Diego.

The degrees of abundance are arbitrarily designated as (1) common, which, for example, in the case of Corambella sp., may number as many as 140 individuals per square foot of kelp surface; (2) uncommon, such as Crimora coneja, one or two specimens of which may be observed every second or third trip to Point Loma; and (3) rare, indicating that very few individuals have ever been collected.

Examples of prey-predator associations such as that which exists between Armina californica and the sea pansy, Renilla koellikeri, are noted. The substrata for the intertidal and subtidal habitats are rocky unless stated otherwise.

The new ranges are followed by the old in parentheses. A species name preceded by a single asterisk (*) indicates that I have never collected that form. Two asterisks (**) are used to signify new species whose descriptions will shortly appear in this journal. A list of positions for the geographic points mentioned is included.

ALASKA

Sitka 57° 03' N 135° 20' W

BRITISH COLUMBIA

Nanaimo, Vancouver Island 49° 10' N 123° 56' W

CALIFORNIA

Humboldt Bay 40° 45' N 124° 14' W
 Gualala 38° 48' N 123° 30' W
 Bodega Bay 38° 18' N 123° 03' W
 Dillon Beach 38° 14' N 122° 58' W
 Tomales Bay 38° 14' N 122° 59' W
 San Francisco Bay 37° 47' N 122° 27' W
 Moss Beach 37° 32' N 122° 31' W
 Santa Cruz 36° 58' N 122° 01' W
 Pacific Grove 36° 38' N 121° 55' W
 Monterey 36° 37' N 121° 53' W
 Cayucos 35° 26' N 120° 54' W
 Pismo Beach 35° 09' N 120° 38' W
 Point Conception 34° 27' N 120° 28' W
 Santa Barbara 34° 25' N 119° 41' W
 Santa Cruz Island 34° 01' N 119° 41' W
 San Pedro 33° 44' N 118° 16' W
 Corona del Mar 33° 36' N 117° 54' W
 Newport Bay 33° 36' N 117° 54' W
 Laguna Beach 33° 32' N 117° 44' W
 Catalina Island 33° 29' N 118° 36' W
 Doheny Beach 33° 27' N 117° 39' W
 La Jolla 32° 52' N 117° 15' W
 San Diego 32° 42' N 117° 11' W
 Point Loma 32° 40' N 117° 14' W

MEXICO

Los Coronados Islands 32° 24' N 117° 14' W
 Bahia Todos Santos 31° 52' N 116° 38' W
 Bahia de Los Angeles 28° 55' N 113° 32' W
 Isla Cedros 28° 22' N 115° 12' W
 Punta Eugenia 27° 51' N 115° 05' W
 La Paz 24° 10' N 110° 19' W
 Cabo San Lucas 22° 52' N 109° 53' W

FLORIDA

Manatee Bay 27° 30' N 82° 35' W

CHILE

Isla de Chiloé 41° 52' S 73° 50' W

ANASPIDEA

APLYSIIDAE

Aplysiinae

Aplysia californica COOPER, 1863.

Common intertidally and subtidally to 40 feet. Bodega Bay to the Gulf of California.

* *Aplysia juliana* QUOY & GAIMARD, 1832.

Cosmopolitan in warm seas. Coast of California.

Aplysia vaccaria WINKLER, 1955.

Common intertidally. San Pedro to Point Loma (San Pedro to Doheny Beach).

Dolabriferinae

Phyllaplysia zostericola McCauley, 1960.

Common in bays and lagoons on the eelgrass, *Zostera marina*. San Juan Island to San Diego Bay (San Juan Island to Newport Bay).

NOTASPIDEA

Umbraculacea

TYLODINIDAE

Tylodina fungina GABB, 1865.

Locally abundant intertidally and in bays on the yellow sponge, *Verongia thiona*. Cayucos to Todos Santos Bay (Santa Barbara Island to San Diego).

Pleurobranchacea

PLEUROBRANCHIDAE

* *Pleurobranchus californicus* DALL, 1900.

Crescent City to San Diego (San Pedro to San Diego).

* *Pleurobranchus digueti* ROCHEBRUNE, 1895.

San Pedro to the Gulf of California.

SACOGLOSSA

Elysiacea

ELYSIIDAE

Elysia hedgpethi MARCUS, 1961.

Seasonally common intertidally, July through September. Tomales Bay to La Jolla.

HERMAEIDAE

Hermaeinae

Hermaeina smithi MARCUS, 1961.

Seasonally common intertidally, January through June. San Juan Island to San Diego (Tomales Bay).

NUDIBRANCHIA

Doridacea

EUDORIDACEA

Cryptobranchia

DORIDIDAE

Glossodoridinae

Cadlina flavomaculata MacFarland, 1905.

Uncommon intertidally and subtidally to 65 feet. Vancouver Island to Point Eugenia (Vancouver Island to San Diego).

Cadlina marginata MACFARLAND, 1905.

Common subtidally to 150 feet; not known from the intertidal. Vancouver Island to Point Eugenia (Vancouver Island to San Diego).

Cadlina sparsa (ODHNER, 1921).

Rare intertidally and subtidally to 131 feet. San Diego to the Juan Fernandez Islands, Chile.

** *Cadlina sp.*

Rare subtidally to 140 feet. La Jolla to the Coronados Islands.

Glossodoris californiensis (BERGH, 1879).

Uncommon intertidally and subtidally to 100 feet. Monterey to the Coronados Islands (Monterey to San Diego).

Glossodoris macfarlandi (COCKERELL 1902),

Uncommon intertidally at the southern end of its range; rare subtidally to 30 feet in the north. Monterey to the Coronados Islands (San Pedro to San Diego).

Glossodoris porterae (COCKERELL, 1902).

Uncommon intertidally. Monterey to Cedros Island (Monterey to San Diego).

SUBFAMILY *incertae sedis** *Glossodoridiformia alba* O'DONOGHUE, 1927.

Intertidal. Laguna Beach.

Thorunninae

Rostanga pulchra MACFARLAND, 1905.

Uncommon intertidally and subtidally to 60 feet. Vancouver Island to Chile; Japan.

* *Aldisa sanguinea* (COOPER, 1862).

Rare intertidally. Bodega Bay to San Diego; Japan.

Archidoridinae

Archidoris montereyensis (COOPER, 1862).

Rare intertidally and uncommon subtidally to 150 feet. Alaska to San Diego.

Discodoridinae

Anisodoris nobilis (MACFARLAND, 1905).

Common on bay boat landings and pilings and subtidally to 100 feet; rare intertidally. Vancouver Island to the Coronados Islands (Vancouver Island to Laguna Beach).

Diaulula sandiegensis (COOPER, 1862).

Uncommon intertidally; common subtidally to 120 feet. Japan to Cape San Lucas (Japan to San Diego).

* *Discodoris heathi* MACFARLAND, 1905.

Rare intertidally. Vancouver Island to Laguna Beach.

PLATYDORIDINAE

* *Platydorid macfarlandi* HANNA, 1951.

Subtidal to about 516 feet. Pismo Beach.

Phanerobranchia

NONSUCTORIA

NOTODORIDIDAE

Aegires albopunctatus MACFARLAND, 1905

Seasonally common intertidally, March through August; common subtidally to 100 feet. Vancouver Island to the Coronados Islands (Vancouver Island to San Diego).

POLYCKERIDAE

Polycera atra MACFARLAND, 1905.

Seasonally common in bays on boat landings and pilings, April through August; rare intertidally and subtidally. San Francisco Bay to the Coronados Islands (Monterey to San Diego).

** *Polycera sp.*

Seasonally common on offshore kelp, June through September. Laguna Beach to the Coronados Islands.

Laila cockerelli MACFARLAND, 1905.

Sporadically common intertidally in the spring, at other times absent; uncommon subtidally to 110 feet. Vancouver Island to Cape San Lucas (Vancouver Island to San Diego).

TRIOPHIDAE

* *Triopha aurantiaca* COCKERELL, 1908.

Laguna Beach to La Jolla.

Triopha carpenteri (STEARNS, 1873).

Rare subtidally to 80 feet. Dillon Beach to San Diego; Japan (Dillon Beach to Laguna Beach; Japan).

* *Triopha catalinae* (COOPER, 1863).

Santa Cruz to Catalina Island.

* *Triopha grandis* MACFARLAND, 1905.

Monterey to Laguna Beach.

Triopha maculata MACFARLAND, 1905.

Seasonally common intertidally; rare subtidally to 60 feet. Bodega Bay to San Diego.

* *Triopha scrippsiana* COCKERELL, 1915.

La Jolla.

Crimora coneja MARCUS, 1961.

Uncommon intertidally. Point Loma.

SUCTORIA

ONCHIDORIDIDAE

Acanthodoris lutea MACFARLAND, 1925.

Very rare intertidally in the southern part of its range; seasonally abundant at Moss Beach. Moss Beach to Point Loma (Moss Beach to Cayucos).

Acanthodoris rhodoceras COCKERELL & ELIOT, 1905.

Seasonally common intertidally, April through July; rare subtidally to 60 feet. Dillon Beach to the Coronados Islands (Dillon Beach to San Diego).

GONIODORIDAE

Hopkinsia rosacea MACFARLAND, 1905.

Common intertidally; rare subtidally to 20 feet. Eureka to Point Loma (Gualala to Point Loma).

Ancula pacifica MACFARLAND, 1905.

Very rare intertidally. Moss Beach to Point Loma (Monterey to La Jolla).

Trapania velox (COCKERELL, 1901).

Seasonally common on bay boat landings and pilings, July through October. San Francisco Bay to San Diego Bay (La Jolla).

CORAMBIDAE

Corambe pacifica MACFARLAND & O'DONOGHUE, 1929.

Seasonally common on colonies of the bryozoan, *Membranipora serrilamella*, growing on offshore kelp, January through September; at other times absent. Vancouver Island to Point Eugenia (Vancouver Island to Monterey).

***Corambella* sp.

This species shares the same habitat with the above form. Although their seasonal appearance coincides, *Corambe pacifica* seems to reach its maximum population density in March and April while *Corambella* sp. is most abundant during June and July. Vancouver Island to the Coronados Islands.

POROSTOMATA

DENDRODORIDAE

Dendrodoris albopunctata (COOPER, 1863).

Common intertidally and subtidally to 150 feet. Monterey to Point Eugenia (Monterey to Point Loma).

Dendronotacea

TRITONIIDAE

**Tritonia exsulans* BERGH, 1894.

Intertidal and subtidal to 1'020 feet. Coast of Japan to Baja California (26° 14' N; 113° 13' W); Manatee Bay, Florida.

Tritonia festiva (STEARNS, 1873),

Uncommon intertidally and subtidally to 80 feet. Vancouver Island to the Coronados Islands (Tomales Point to Corona del Mar).

**Tritonia palmeri* COOPER, 1862.

San Pedro.

**Tritoniopsis aurantia* MATTOX, 1955.

Catalina Island.

HANCOCKIIDAE

Hancockia californica MACFARLAND, 1923.

Uncommon intertidally at the northern end of its range, rare on floating kelp at the southern extremity; unknown from any intermediate point south of Monterey. Dillon Beach to Baja California (26° 43' N; 114° 29.5' W) (Monterey).

DENDRONOTIDAE

Dendronotus frondosus (ASCANIUS, 1774).

Rare intertidally and subtidally to 1'312 feet; uncommon on offshore kelp. Cosmopolitan in the Northern Hemisphere.

Dendronotus iris COOPER, 1863.

Rare subtidally to 85 feet. Vancouver Island to the Coronados Islands (Vancouver Island to Santa Barbara).

PHYLLIROIDAE

Cephalopyge trematoides (CHUNN, 1889).

Rare; pelagic. Usually collected accidentally in plankton tows. Cosmopolitan.

TETHYIDAE

Melibe leonina (GOULD, 1853).

Seasonally common on offshore kelp, March through September; at other times rare or absent. Alaska to La Paz Bay (Alaska to La Jolla).

Arminacea

EUARMINACEA

ARMINIDAE

Armina californica (COOPER, 1862).

Locally common subtidally on sandy and muddy bottoms to 289 feet in association with the sea pansy, *Renilla koellikeri*, upon which it feeds; rare intertidally. Vancouver Island to Panama.

PACHYGNATHA

ANTIOPELLIDAE

Janolus barbarentis (COOPER, 1863).

Seasonally common intertidally and in bays and lagoons, May through August. Santa Barbara to Point Loma (Santa Barbara to La Jolla).

DIRONIDAE

* *Dirona albolineata* COCKERELL & ELIOT, 1905.

Rare intertidally and subtidally to 115 feet. Vancouver Island to Laguna Beach.

Dirona picta COCKERELL & ELIOT, 1905.

Seasonally common intertidally, June through August; at other times absent. Dillon Beach to Point Loma (Dillon Beach to La Jolla).

Eolidacea

PLEUROPROCTA

CORYPHELLIDAE

* *Coryphella cooperi* COCKERELL, 1901.

San Pedro.

Coryphella pinna MARCUS, 1961.

Uncommon intertidally and on boat landings; seasonally common on offshore kelp, April through June. Dillon Beach to the Coronados Islands (Dillon Beach to Point Pinos).

FLABELLINIDAE

Flabellina iodinea (COOPER, 1862).

Uncommon intertidally; common subtidally to 120 feet. Vancouver Island to the Coronados Islands (Vancouver Island to San Diego).

ACLEIOPROCTA

EUBRANCHIDAE

Capellinia rustya MARCUS, 1961.

Seasonally common on offshore kelp, February through August. San Francisco Bay to Bahia de Los Angeles (Monterey).

FIONIDAE

Fiona pinnata ESCHSCHOLTZ, 1831.

Seasonally uncommon on floating wood, algae, buoys, etc., April through August. If present at all, there are often large numbers of individuals on the floating object. Cosmopolitan.

CLEIOPROCTA

FACELINIDAE

Hermisenda crassicornis (ESCHSCHOLTZ, 1831).

The most common nudibranch in Southern

California, intertidal and subtidal to 120 feet. Also common in bays and lagoons on mud flats, boat landings, and pilings. Sitka, Alaska, to Point Eugenia (Sitka, Alaska, to San Diego).

PHIDIANIDAE

** *Phidiana* sp.

Uncommon intertidally; common subtidally to 120 feet. Monterey to the Coronados Islands.

AEOLIDIIDAE

Aeolidia papillosa (LINNAEUS, 1761).

Seasonally rare intertidally and subtidally to 2'493 feet, February through May. Cosmopolitan.

SPURILLIDAE

Spurilla chromosoma COCKERELL & ELIOT, 1905.

Rare intertidally. San Pedro to Point Loma.

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A New Commensal Polyclad from Panama

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(Plate 16)

While collecting prosobranch gastropods along the sea wall in Balboa Park, Panama City, Panama (9°0'N., 79°30'W.), an acotylean polyclad was found in the mantle cavity of *Nerita* (*Ritena*) *scabricosta ornata* Sowerby, 1823. The classification of the snail was determined by comparison with the text and figures of A. Myra Keen (1958, p. 266, figs. 81, 81a). The gastropods were lodged in rock fissures in the supralittoral zone. The polyclads were seen in the shell aperture when the *Nerita* were removed from the substratum. When the snails were disturbed, the flatworms returned to the mantle cavity before the operculum closed the shell aperture. Some of the gastropods had as many as eight to ten large polyclads within the mantle cavity. As stated in an earlier paper (Smith, 1960, p. 385), the micro-plankton or detritus which enter the mantle cavity could hardly serve as food for a carnivorous polyclad. Since the polyclads were observed outside of the feeding gastropods, it would seem that the polyclads only used the snail's mantle cavity as a retreat after feeding and for the protection offered by a closed operculum.

Hoploplana luracola E. H. SMITH, spec. nov.

The living form is elongate, becoming slightly circular after preservation (Plate 16, figure 1). The largest preserved specimen measured 6.0 mm. by 3.0 mm. However, most of the animals are of about the same size (average of six measured specimens, 5.5 mm. by 3.0 mm.). The dorsal surface is smooth with a pair of short tentacles anteriorly.

The over-all color of the polyclad is light brown with slightly darker dots covering all of the dorsal surface. A dark brown stripe runs the length of the animal, mid-dorsally.

The tentacular eyes occur in groups around the bases of the tentacles and some appear to occur within the tentacles (Plate 16, figure 3). Each group consists of 14 to 16 tentacular eyes. The cerebral eyes number 19 to 33 in each cluster and form two irregular rows on opposite sides of the mid-dorsal line. The eye clusters extend both anteriorly and posteriorly from the tentacles.